

CLAIMS

1. A fuel cell comprising a solid oxide type fuel cell element comprising a solid electrolyte layer having respective faces, a cathode layer formed on one of faces of the solid electrolyte layer and an anode layer formed on the other face of the solid electrolyte layer, wherein said element generates electricity when said solid oxide type fuel cell element is arranged in a flame or in a portion close to the flame;  
10 the solid electrolyte layer being made of porous material, the porosity of which is not less than 10%, so that cracks cannot be caused on the solid electrolyte layer by a sudden temperature change in the solid oxide type fuel cell when the solid oxide type fuel cell is arranged in the flame or in the portion close to the flame or when the solid oxide type fuel cell is separated from the flame or the portion close to the flame; and  
15 a mesh-shaped metal or a wire-shaped metal being embedded in or fixed to at least one of the anode layer and the cathode layer so as to reinforce the anode layer or the cathode layer.
2. A fuel cell according to claim 1, wherein the solid oxide type fuel cell element is formed flat.  
25 3. A fuel cell according to claim 1, wherein the anode layer is arranged on the flame side.
4. A fuel cell according to claim 1, wherein the cathode layer is arranged so that it can be exposed to gas containing oxygen.  
30 5. A fuel cell according to claim 4, wherein gas containing oxygen is blown to the cathode layer.
6. A fuel cell according to claim 1, wherein the flame is generated when organic substance is used as fuel.  
35 7. A fuel cell according to claim 1, wherein the flame is a premixed flame.
8. A fuel cell according to claim 1, wherein the

anode layer is composed of a sintered body, the primary component of which is conductive oxide.

9. A fuel cell according to claim 8, wherein the conductive oxide is nickel oxide in which lithium is solidly dissolved.

10. A fuel cell comprising a solid oxide type fuel cell element comprising a solid electrolyte layer having respective faces, a cathode layer formed on one of faces of the solid electrolyte layer and an anode layer formed on the other face of the solid electrolyte layer, wherein said element generates electricity when said solid oxide type fuel cell element is arranged in a flame or in a portion close to the flame;

15 the solid electrolyte layer being made of porous material, the porosity of which is not less than 10%, so that cracks cannot be caused on the solid electrolyte layer by a sudden temperature change in the solid oxide type fuel cell when the solid oxide type fuel cell is arranged in the flame or in the portion close to 20 the flame or when the solid oxide type fuel cell is separated from the flame or the portion close to the flame.